

and shovel at fourteen shillings a week."—This number contains an interesting paper on the Hallucinations of Mahomet and others, by W. W. Ireland, M.D.—In the April number we find the Morisonian lectures on Insanity for 1873, this time written entirely by Dr. Clouston; the Morbid Psychology of Criminals continues; an article on the Family Care of the Insane in Scotland, by Prof. Friedrich Jolly, of Strasburg, is valuable, inasmuch as it helps us "to see ourselves as others see us," and pleasing, as this time we may look and be not ashamed. "This visit," says Prof. Jolly, "and the information furnished by these gentlemen, as well as a more careful study of the Scottish Reports and their appendices, convinced me that it is no 'Gheel in the North' with which we have to do, but an organisation which rests on a quite different and much sounder basis."—George Shearer, M.D., communicates notes to show that "Diseases of the general nervous system are by no means infrequent amongst the Chinese, but cases of alienation of mind are comparatively few."—Mr. E. Thompson continues and concludes his paper on the Physiology of General Paralysis of the Insane and of Epilepsy. The worst things in the paper are a few unseemly remarks directed against Dr. Hughlings Jackson.—The July number opens with a Chapter on some Organic Laws of Personal and Ancestral Memory, by J. Laycock, M.D.—The Morisonian lectures on Insanity are continued from the previous number.—David Nicholson M.B., furnishes his excellent articles on the Morbid Psychology of Criminals, which we have always read with much pleasure.—S. Messenger, F.R.C.S., writes under the title, "Moral Responsibility," to show that we all are what we are because, given our parents and our circumstances, we could not have been otherwise. The moral of "this theory of no-moral of responsibility" is very good, "we should be more generally charitable in our judgments, more universal in our forbearance." It is a pity that the men who are continually claiming to be the only scientific men cannot reach such simple conclusions without outraging language and common sense in order to show, by the way, that they are not metaphysicians. Mr. Messenger describes the manufacture of thought as similar to the manufacture of gastric juice—the action of the brain is like "that of the stomach, whose peptic glands secrete the gastric juice from the circulating blood, but need the stimulus of food to excite the process." It would be a great advantage to the scientific men of this stamp if they would try "the means of observation which metaphysicians employ," or any other that might help them to see that intelligence is not a juice.

In the *Scottish Naturalist* for April and July 1875, the difficult subject of the relationship between the mental development of man and of the lower animals occupies a rather prominent place, in a series of articles by Dr. Lauder Lindsay, on "Illustrations of Animal Reason," and one by the Rev. J. Wardrop, on "Animal Psychosis."—The former writer also contributes a paper on "The Auriferous Quartzites of Scotland," in which he brings forward evidence in support of the view long since published by him of the auriferous character of the whole Lower Silurian area of Scotland; the rocks being identical stratigraphically with those of the gold-fields of the province of Otago, in New Zealand.—There are several other good geological papers, especially one by Mr. R. Walker, "On Clays containing *Ophirolepis gracilis*, &c., near St. Andrew's."—The zoological and botanical papers are mostly descriptive, and we have continuations of the "Lepidoptera of Scotland," by Dr. Buchanan White, and the "Coleoptera of Scotland," by Dr. D. Sharp.

THE numbers of the *Journal of Botany* from March to July contain many articles of interest; and nearly every number is now illustrated by at least one original drawing. Those in the numbers now under notice are the fruit of the Bitter Cola, an undescribed species of Clusiaceæ from Wesetrn Tropical Africa, nearly allied to *Garcinia*, several species or new or rare Hymenomycelous Fungi (coloured), *Deidamia Thompsoniana*, a remarkable species of Passifloraceæ, and *Carex ornithopoda*, a newly discovered British species. Besides a number of abstracts and short notes, the following are the more important original articles in these numbers:—Descriptions of a number of new and unpublished species by Dr. Masters, Dr. Trimen, Mr. J. G. Baker, Dr. Hance, and others. In Cryptogamy, Mr. Worthington Smith describes a number of new species of fungi; the Rev. J. M. Crombie the additions to the British lichen flora since his last notice; and Mr. J. G. Baker several new ferns. One of the best papers in these numbers is by Mr. A. H. Church, with an account of some recent investigations in phyto-chemistry at the laboratory at Cirencester. An analysis of the dried substance of

a fungus (*Geoglossum difforme*), and of a lichen (*Collema furvum*), showed the former to contain 19 and the latter as much as 28 per cent. of albuminoids; while the former contains the very large proportion of 13.87, and the latter 6.57 per cent. of ash. Cotton, generally considered to be almost pure cellulose, was analysed with the following result:—

Water	...	...	7.56	per cent.
Oil and fat	...	...	0.51	"
Albuminoids	...	...	0.50	"
Gummy matters	...	...	0.17	"
Ash	...	...	0.11	"
Cellulose	...	...	91.15	"
				100.00

The composition of the pollen of *Cupressus fragrans* was determined as under:—

Carbohydrates and undetermined	85.76	per cent.
Oil and fat	1.87	"
Albuminoids	8.67	"
Ash	3.70	"
	100.00	

Zeitschrift der Oesterreichischen Gesellschaft für Meteorologie, June 15.—This number contains a paper by Herr Hellmann, of Berlin, on the extension of a short series of observations on temperature by means of the long series of a neighbouring station. It was one of Dove's results that series of mean temperatures of two neighbouring places derived from a different number of years might be reduced so as to extend over equal periods. His hypothesis has proved a fruitful one. The object of Herr Hellmann was to confirm its value, and this he did by taking mean temperatures already obtained by observation for long and equal periods at two neighbouring places; then assuming that, say for the last five years, no observations had been made at one of them, and calculating from those of the other the required means for the whole period. The difference between the real values and those calculated expresses about the amount of error incurred, which is surprisingly small. Thus, out of eighty-four monthly means for seven pairs of similarly situated stations, only four differences exceeded one-tenth of a degree. But when a hill station is compared with a valley station the agreement is not so good, and it appears that with increase of height the climate becomes more uniform; between an inland and a coast station the difference is still greater, but rarely exceeds half a degree. We may conclude that observations made at a place situated on a plain may safely be employed for the extension of a shorter series of observations made at another place at no great distance, similarly situated, and that the error will be greater when stations different in position are compared.

July 1.—This number contains a review of Mr. Symons's publications on British Rainfall, by M. Raulin, of Bordeaux, and, among the "Kleinere Mittheilungen," a paper on the production of centres of cold in winter.

SOCIETIES AND ACADEMIES

LONDON

Royal Horticultural Society, July 7.—General Meeting.—Hon. and Rev. J. T. Boscawen in the chair.—The Rev. M. J. Berkeley briefly alluded to Mr. Worthington Smith's paper before the Scientific Committee.

July 21.—Scientific Committee.—M. T. Masters, M.D., F.R.S., in the chair.—Mr. Bennett exhibited a fine specimen of a fasciated cucumber stem bearing two cucumbers.—Mr. W. G. Smith made a further communication on the resting spores of the potato fungus.—A letter was read from Mr. C. E. Broome, including a sketch of *Diplodia*-like bodies met with in the mycelial filaments.—Mr. Renny made a communication on the same subject, and exhibited a species of *Pythium* (*Saprolegnia*), which, without care, might be mistaken for the state of *Peronospora* described by Mr. Smith.—A letter was read from Lady Mathison, accompanying specimens of various larvæ which proved very destructive to the otherwise thriving plantation of Falkland Island Tussock grass (*Dactylis caespitosa*) in the island of Lewis.—Mr. Alfred Bennett called attention to the rapid growth of the flower-stalk of *Vallisneria spiralis*, which he had observed to grow as much as 12 inches in twenty-four hours.—A letter, communicated by Dr. Hooker, F.R.S., was read from Dr. Imray, of

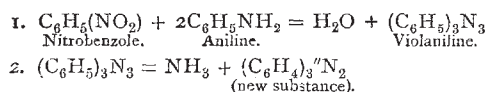
Dominica, accompanied by an excellent series of specimens of the minute moth (*Cemistoma coffeella*) which injures the leaves of the coffee plant in Dominica.—Dr. Masters exhibited a flower of a hybrid *Tacsonia* in which the anthers were replaced by petals, while from the apex of the tube formed by the filaments, a second corona of blue threads proceeded. Dr. Masters also exhibited a flower of a *Cattleya*, in which there were three equal sepals and four petals all lip-like. From the arrangement of the parts Dr. Masters concluded that there was in this specimen a passage from the whorled to the spiral arrangement.

General Meeting.—Hon. and Rev. J. T. Boscawen in the chair.—The Rev. M. J. Berkeley commented upon the objects exhibited and also upon Mr. W. G. Smith's further observations upon the resting spores of the potato-disease fungus.—Prof. Thistelton Dyer made some observations upon a fine pan of *Droseras* from the New Forest, exhibited by the Chairman.—Dr. Masters commented on the splendid pitchers of *Nepenthes* sent by Mr. D. Thomson, gardener to the Duke of Buccleugh at Drumlanrig.

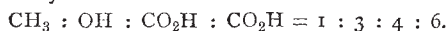
Quekett Microscopical Club, July 23.—Annual Meeting.—Dr. Matthews, president, in the chair.—The report showed that the club had completed the tenth year of its existence and that it continued to make most satisfactory progress; the meetings had been well attended, excellent papers had been read and useful work accomplished, whilst the library and cabinet were in good order, and the field excursions had been very successful. The treasurer's statement showed that the year's income from all sources amounted to 291*l.* 13*s.* 11*d.*, and that there was a balance in hand of 73*l.* 9*s.* 9*d.* Votes of thanks to the president and officers were duly passed, as was also a special vote of thanks to the Council of University College for their continued kindness in allowing the meetings to be held in the library of that building.—The annual address was delivered by the President, and upon its conclusion a ballot took place for the election of officers and committee for the ensuing year. Dr. J. Matthews was re-elected President. Messrs. J. Crisp, R. T. Lewis, B. T. Lowne, and T. C. White, Vice-Presidents. As Hon. Sec., Mr. Ingpen; as Treasurer, Mr. Gay. Hon. Sec. for Foreign Correspondence, Dr. M. C. Cooke. And to fill the four vacancies on Committee, Messrs. M. H. Johnson, F. Oxley, T. Rogers, and Joseph A. Smith.

BERLIN

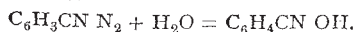
German Chemical Society, June 28.—A. W. Hofmann, president, in the chair.—Messrs. von Dechen and Wichelhaus have studied the action of nitrobenzole on aniline. They obtain an amorphous violet colouring substance to which they give the formula $(C_6H_4)_3N_2$; explaining its formation by the equations—



Messrs. Oppenheim and Pfaff have continued their researches on oxyvitinitic acid, $C_6H_2 \begin{Bmatrix} OH \\ CH_3 \\ (CO_2H)_2 \end{Bmatrix}$. They have prepared the methylic ether and the first anhydride of this acid, which they have found to be produced not only by the action of chloroform but also by that of chloral, of trichloroacetic ether, and of the chloride of carbon CCl_4 on the sodium-compound of acetic ether. They have prepared 150 grammes of pure cresol from this acid and by transforming this cresol into cresotinic acid, methylic and ethylic ethers, methyloxybenzoic, ethyloxybenzoic, and oxybenzoic acids, and studying the properties of these bodies they have determined the cresol obtained to be *metacresol*. This leads them to allege the following position to the lateral groups of oxyvitinitic acid—

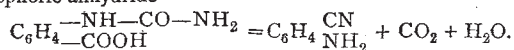


The same chemists have found anisic acid to have the melting-point $184^{\circ} \cdot 2$ and methyloxybenzoic acid $106\text{--}107^{\circ}$, the melting-points formerly given being 10° too low.—P. Griess has transformed diazocyanobenzol into cyanophenol, by heating its sulphate with water—



Hydrochloric acid splits it into ammonia and meta-oxybenzoic acid. The cyananiline necessary for preparing the diazo com-

pound had been prepared by heating uramidobenzoic acid with phosphoric anhydride—



—A. Ladenburg has repeated Mr. Fittica's experiments without obtaining a trace of his presumed and inexplicable isomers of Nitrobenzoic acid.—O. Witt, by treating diphenylamine with nitrous ether has transformed it into yellow brilliant crystals of diphenyl-

nitrosamine $N \begin{Bmatrix} /C_6H_5 \\ \backslash C_6H_5 \end{Bmatrix} NO$.—A. Pinner has transformed $C_3H_2Cl_2$ into

a nitrochloroallylene, which, with tin and hydrochloric acid yields $C_3H_4Cl_2NH_2$ trichloropropylamine. Sodium acts on $C_3H_2Cl_2$ in a peculiar way. It forms with it a solid compound decomposed by water into chloride of sodium and C_3H_2 a gas forming the bromide $C_3H_2Br_2$.—A. W. Hofmann has distilled the compound ammonium $(CH_3)_3NC_2H_3OH$, hoping to obtain vinylic alcohol; he obtained, however, trimethylamine, water, and acetylene.

PARIS

Academy of Natural Sciences, July 26.—M. Fremy in the chair. The following papers were read:—Researches on the theory of aberration, and considerations on the influence of the proper motion of the solar system in the phenomenon of aberration, by M. Yvon Villarceau.—On the latitude of Abbadia near Hendaye (Basses Pyrenees), by M. A. D'Abbadie.—On the distribution of magnetism in compound bundles of very thin bars of finite length, by M. J. Jamin.—Note by M. Chevreul on the Compte Rendu of the meeting of July 19.—Complementary notice on the contemporaneous formation of minerals by the thermal springs of Bourbonne-les-Bains (Haute Marne); production of phosgenite, by M. Daubrée.—Researches on the phenomena produced by electric currents of high tension, and their analogy with natural phenomena, by M. G. Planté.—Action of electrolytic oxygen on glycerine, by M. Ad. Renard. The author finds as the result of this action formic and acetic acids and the first glyceric aldehyde.—Study of the pyrites employed in France for the manufacture of sulphuric acid, by MM. A. Girard and H. Morin.—On the toxic properties of the fermentation alcohols, by MM. Dujardin-Beaumetz and Audigé.—On amyloxanthate of potassium (for the destruction of Phylloxera), by MM. Zoeller and Grete.—On the thermal phenomenon accompanying inversion, by M. G. Fleury. The author concludes that the inversion of sugar by acids is an exothermal phenomenon.—Note on a substance serving to adulterate guanos, by M. F. Jean.—New researches on germination, by M. P. P. Dehérain.—Experiments showing that the mammae removed from young female guinea pigs are not reproduced, by M. J. M. Philipeaux.

BOOKS AND PAMPHLETS RECEIVED

BRITISH.—British Wild Flowers. Parts 14 and 15: J. E. Sowerby (Van Voerst).—Sound. New Edition: J. Tyndall, D.C.L., LL.D., F.R.S. (Longmans).—Six Lectures on Light, delivered in America, 1872–73. New Edition: J. Tyndall, D.C.L., LL.D., F.R.S. (Longmans).—Geometrical Contributions to the *Educational Times*: T. Archer Hirst, F.R.S. (Hodgson and Son).—Report of the Inspectors of Irish Fisheries for 1874 (Dublin, Thom).—Insectivorous Plants: Charles Darwin, M.A., F.R.S. (John Murray).

CONTENTS

	PAGE
AMERICAN GEOLOGICAL SURVEYS. By Prof. ARCH. GEIKIE, F.R.S.	253
FISKE'S "COSMIC PHILOSOPHY." By DOUGLAS A. SPALDING	267
OUR BOOK SHELF:—	
Wilson on "Fertilisation of the Cereals"	270
Oliver's "Official Guide to the Kew Museums"	270
LETTERS TO THE EDITOR:—	
On the Mechanical Work done in exhausting a Muscle—Prof. F. E. NIPHER (<i>With Illustration</i>)	271
Domestic Economy of Blackbirds—E. R. W.	272
Scarcity of Birds—JOSEPH JOHN MURPHY	272
Hay Crops of 1875—Dr. C. M. INGLEBY	272
OUR ASTRONOMICAL COLUMN:—	
Variable Stars	272
The Great Cluster, Messier II	272
New Minor Planet	272
The Great Comet of 1843	272
Comet 1874 (II)	273
PROF. LOOMIS ON THE U.S. WEATHER MAPS	273
ON THE HORIZONTAL PHOTOGRAPHIC TELESCOPE OF LONG FOCUS	273
ON THE CARDIOGRAPH TRACE. By Prof. A. H. GARROD, F.Z.S.	275
SIR JAMES KAY-SHUTTLEWORTH ON SCIENTIFIC TRAINING	276
THE INTERNATIONAL GEOGRAPHICAL CONGRESS AND EXHIBITION	278
NOTES	279
THE MORTALITY OF THE LARGE TOWNS OF THE BRITISH ISLANDS IN RELATION TO WEATHER. By ALEXANDER BUCHAN (<i>With Illustrations</i>)	281
SCIENTIFIC SERIALS	282
SOCIETIES AND ACADEMIES	282
BOOKS AND PAMPHLETS RECEIVED	283